## Course specification

**University/Academy:** Damanhour  
**Faculty/Institute:** Science  
**Department:** Zoology

<table>
<thead>
<tr>
<th>1. course Data:</th>
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<tbody>
<tr>
<td><strong>Course code:</strong></td>
<td><strong>Zool 403</strong></td>
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<tr>
<td><strong>Course title:</strong></td>
<td>Cytology and Cytochemistry</td>
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<tr>
<td><strong>Academic year:</strong></td>
<td>2010/2011</td>
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<tr>
<td><strong>level:</strong></td>
<td>1st semester fourth year</td>
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<td><strong>Specialization:</strong></td>
<td>Special zoology</td>
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<tr>
<td><strong>No. of instructional units:</strong></td>
<td>lecture 3hrs/week, practical 4hrs/week</td>
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<th>2. course Aim</th>
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<td><strong>The overriding aim for all awards in the course is to provide knowledge on cell biology with particular emphasis on the cell structure and function; cell regulation; specific properties of tumor cell; cells with specialized functions; methods for cytochemistry techniques.</strong></td>
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<th>3. Intended learning outcome</th>
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| **a) Knowledge and understanding** | **A1. Recognize an understanding of the structure and function of the cell.**  
**A2. List different types of cytochemical technique.** |
| **b) Intellectual skills** | **By the end of the course student will have the ability to:**  
**B1. Choice the cytochemical methods to determine the chemical composition of the cells**  
**B2. Apply the basic skill of seeking, handling and interpreting information to awards the Creation of new knowledge.**  
**B3. Capable of carry out critical review of the** |
literature and to be aware of alternative approaches to study of the cell biology.

c) Professional skills

By the end of the course student will have the ability to:

C1. Elicit the different cell structures under the electron microscope.
C2. use their practical skills to understand the scientific approach in cytology and cytochemistry.
C3. Manage skills that enable a harmonic working group.

d) General skills

At the end of this course students will have:

D1: Communicate with each other for covering both written & oral exam
D2: Exchange ideas, principles and information by oral, written and visual means.
D3: Work effectively both in a team and independently.

4. course content

- Cell membrane: cell junctions, endocytosis & exocytosis.
- Mitochondria: electron transport chain, mitochondrial protein synthesis, mitochondrial cytopathy syndrome.
- Golgi apparatus: structure and function.
- Lysosomes
  - Rough endoplasmic reticulum & smooth endoplasmic reticulum.
- Cytoskeleton
- Nucleus:
  - Ultrastructure of the nucleus, Function of the nucleus, Protein synthesis, Cell Division, Cell Signaling
  - Cells with specialized functions.
- Specific properties of tumor cell.
### Methods for cytochemical techniques:
- Methods for detection of carbohydrates
- Methods for detection of lipids

### 5. Teaching and learning methods
1. Lecture.
2. Practical.
3. Contact hours.
4. Problem-Based learning.
5. Encourage students to use online and library resources.

### 6. Teaching and learning methods for students with special needs

### 7. Student Assessment

#### a. Procedures used:
- Final-Term Examination: to assess student writing and drawing ability expressing his/her understanding of Cell Biology and Cytochemistry
- Class activities (reports, discussions, practical...etc): to assess the student intellectual, professional, practical and general and transferable skills

#### b. Schedule:
- Assessment 1 Practical Examination Week 12
- Assessment 1 Final-Term Examination Week 14

#### c. Weighing of Assessment:
- Mid-Term Examination 15 0.0%
- Final-Term Examination 150 75%
- Oral Examination 0.0%
- Practical Examination 25 25%
<table>
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<tr>
<th>Semester Work</th>
<th>10</th>
<th>0.0%</th>
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<tr>
<td>Other types of assessment</td>
<td>0.0 %</td>
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<td><strong>Total</strong></td>
<td>200</td>
<td>100</td>
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8. List of Textbooks and References:

- Histochemistry Theoretical and Applied, Pearse A Everson J. & A. Chrchill Ltd.

a. Course Notes

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b. Required Books

(Textbooks)

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c. Recommended Books

Basic Histology, Carlos Junqueira, Jose Careiro, Robert O. Kelley Prentice-Hall International, Inc.

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d. Periodicals, web sites,…,etc

www.nature.com/ncb/index.html

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Course Instructor: Dr. Mohamed El Gerbid

Head of Department: Prof. Karoline Kamel Abdel Aziz

Date: -----/-----/----